

Name \_\_\_\_\_ Date \_\_\_\_\_

## CELL EXPLORATION ACTIVITIES

This packet contains different activities that are all about cells. The activities may be done in any order unless I say otherwise, **EXCEPT FOR #4, 6, AND 12 - DO THOSE LAST!** They will pretty much follow what we do as a class so you might want to do them in order. These activities will be done in class. They are written so that you can do them **INDEPENDENTLY** and **WITHOUT** me. Make sure you do your best since these will count as a major **PROJECT GRADE**. Some of these activities you will do by yourself or with others (see key below). You much have a **NEW PARTNER** each time and **BEWARE**, if I don't get a sense that you are doing the work (not watching others do it), talking about the work (not your social life), or making progress on the work (not just havin' a good time) you'll be asked to do it by yourself or after school under my supervision. Remember, choices come with consequences.

Use the checklist below to make sure you keep track of completed activities.

| Done | Activities                   | Done | Activities              |
|------|------------------------------|------|-------------------------|
|      | 1. How Big Is It?            |      | 7. The Mixed Up Cell    |
|      | 2. Seeing Cells First        |      | 8. Cell Foldable        |
|      | 3. Cells Organelles Check    |      | 9. The Cell As A School |
|      | 4. Cell Quizolas             |      | 10. Cell Inspector      |
|      | 5. A Typical Animal Cell     |      | 11. Cell Structure      |
|      | 6. Plant & Animal Cells Quiz |      | 12. What I've Learned   |

### Activity Key:



These activities require a computer and possibly my web page



These activities require some writing and reflection.



These activities require you to follow procedures and use science materials.



These activities require you to make something to demonstrate your knowledge.



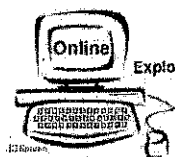
Requires a partner to work with.



Requires a textbook or print materials.

**ACTIVITY 1: HOW BIG IS IT?**

My Partner(s): \_\_\_\_\_



Exploration



1. Explore the "How Big is a...?" web page at <http://www.cellsalive.com/howbig.htm> (or click the link on my web page). Here you will look at objects found on the head of a pin. Your job is to rank them in order of size on the chart below and estimate the length of each (in nanometers, micrometers, or millimeters). The line in the bottom right corner of the screen is used to help you estimate. Sketch each of the objects.

| Object          | Sketch | Size in nanometers, micrometers or millimeters |
|-----------------|--------|--|
| Human hair      |        |  |
| Dust Mite       |        |  |
| Red Blood Cells |        |  |
| E. coli         |        |  |
| Staphylococcus  |        |  |
| Ebola virus     |        |  |
| Rhinovirus      |        |  |

Use **COMPLETE SENTENCES** to write a brief summary of this activity, what you did and what you learned.

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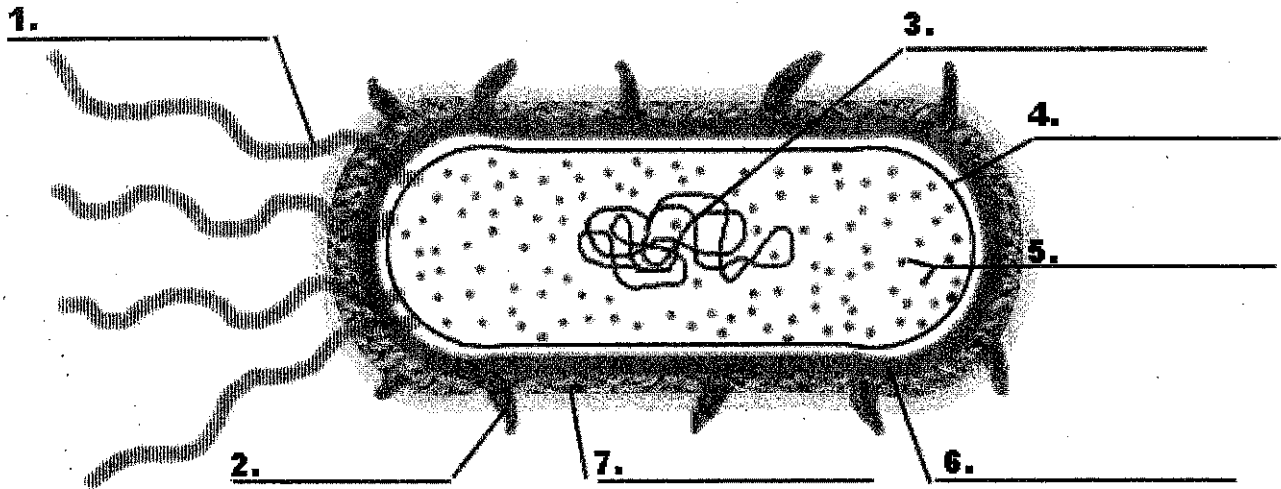
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(top, left)

**Part B: Bacterial Cell Model** - (you will need to return to the "Cell Biology" link to access this page, *Select cell model,* then bacteria). Label the numbered parts on each line.



**Part C: Animal Cell Model** - (you will need to return to the "Cell Biology" link to access this page, or hit your back button) - For this model, you will need to click on the various parts of the cell to go to a screen that tells you about the parts. Answers to the following questions are found there.

1. What do mitochondria do?

Sketch each of the following.

2. How big are mitochondria?

3. What does the Golgi Apparatus do?

4. What is the difference between smooth and rough ER?

5. Where is the nucleolus found?

6. What does the nucleolus do?

Mitochondria

Ribosome

7. What does the cytoskeleton do?

8. Cytosol goes by what other name?

9. What is the function of the cytosol?

10. What is the function of the lysosome?

Nucleus

Cell Membrane

**Part D: Plant Cell Model** - (you will need to return to the "Cell Biology" link to access this page, or hit your back button)

1. What other type of cell has a cell wall?

Sketch the following

Chloroplast

2. What makes the plant cells green?

3. In plant cells, what does the vacuole do?

Vacuole

### Part E: Overview

For the chart below, place a check in the box if the cell has that component.

| Organelle             | Plant | Animal | Bacteria |
|-----------------------|-------|--------|----------|
| Vacuole               |       |        |          |
| Chloroplast           |       |        |          |
| Ribosome              |       |        |          |
| Mitochondria          |       |        |          |
| DNA                   |       |        |          |
| Endoplasmic Reticulum |       |        |          |
| Cell Wall             |       |        |          |
| Golgi Apparatus       |       |        |          |

## ACTIVITY 2: SEEING CELLS FIRST

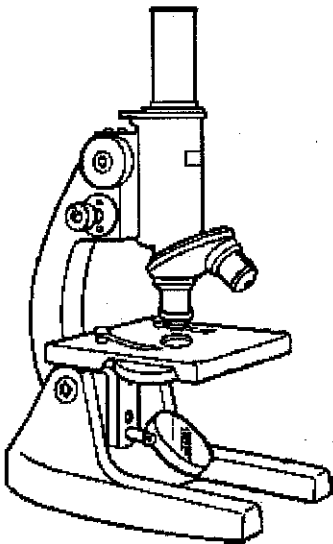


### Directions:

1. Go to <http://www.kbears.com/sciences/microscope.html> (or my web page)
2. Click on any five organisms and use the information to complete the chart below.

| Organism | Sketch | Facts/Information |
|----------|--------|-------------------|
|          |        |                   |
|          |        |                   |
|          |        |                   |
|          |        |                   |
|          |        |                   |

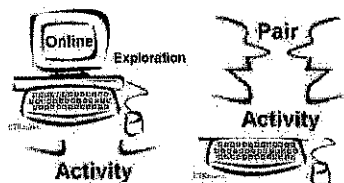
3. Click on "What is a Microscope" and use the info to label the diagram below by drawing arrows from the terms to their location on the microscope (USE A RULER). Next, write a fact or some info about each one.



|                   |
|-------------------|
| Base-             |
| Eyepiece -        |
| Coarse focus knob |
| Arm-              |
| Fine focus knob-  |
| Aperture-         |
| Light-            |
| Stage-            |
| Diaphragm-        |
| Objective lens-   |

**ACTIVITY 3: CELL ORGANELLES CHECK**

My Partner(s): \_\_\_\_\_



1. Go to <http://www.quia.com/jg/65947.html> (or my web page)
2. Play the Flashcard and Matching games Time how long it takes you (you can do it more than once).
3. Enter you scores below.  
My Best Matching Time: \_\_\_\_\_  
My Best Flashcard Time: \_\_\_\_\_
4. Next, play the Concentration game and put your best score here: \_\_\_\_\_

**ACTIVITY 4: CELL QUIZOLAS**

1. Go to [http://www.biology4kids.com/extras/quiz\\_cellorgan/index.html](http://www.biology4kids.com/extras/quiz_cellorgan/index.html) (or my web page)  
Take the quiz and put your score here: \_\_\_\_\_
2. Go to [http://www.zerobio.com/target\\_practice\\_quiz/target\\_practice\\_quiz\\_cells.htm](http://www.zerobio.com/target_practice_quiz/target_practice_quiz_cells.htm) (or my web page)  
Take the quiz and put your score here: \_\_\_\_\_
3. Go to [http://www.proprofs.com/quiz-school/quizshow.php?title=3rd-block-group-2\\_1&quesnum=1](http://www.proprofs.com/quiz-school/quizshow.php?title=3rd-block-group-2_1&quesnum=1) (or my web page)  
Take the quiz and put your score here: \_\_\_\_\_

**ACTIVITY 5: A TYPICAL ANIMAL CELL**

My Partner(s): \_\_\_\_\_



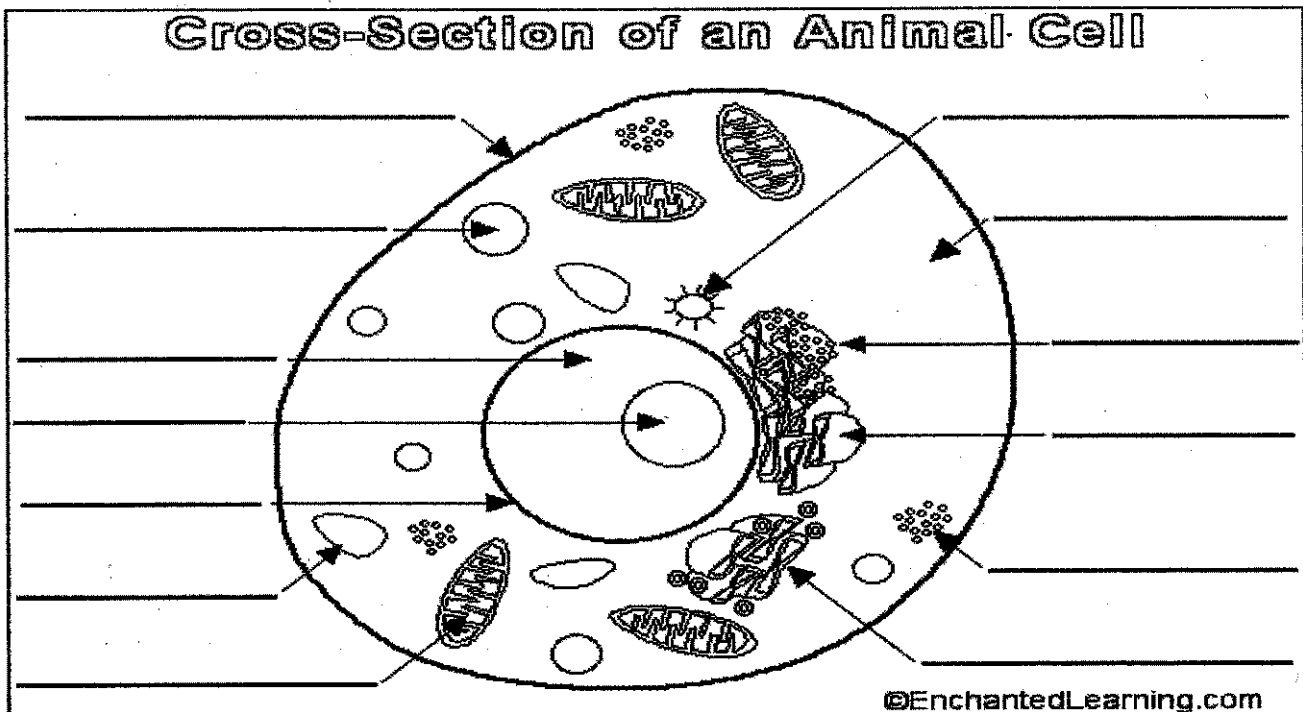
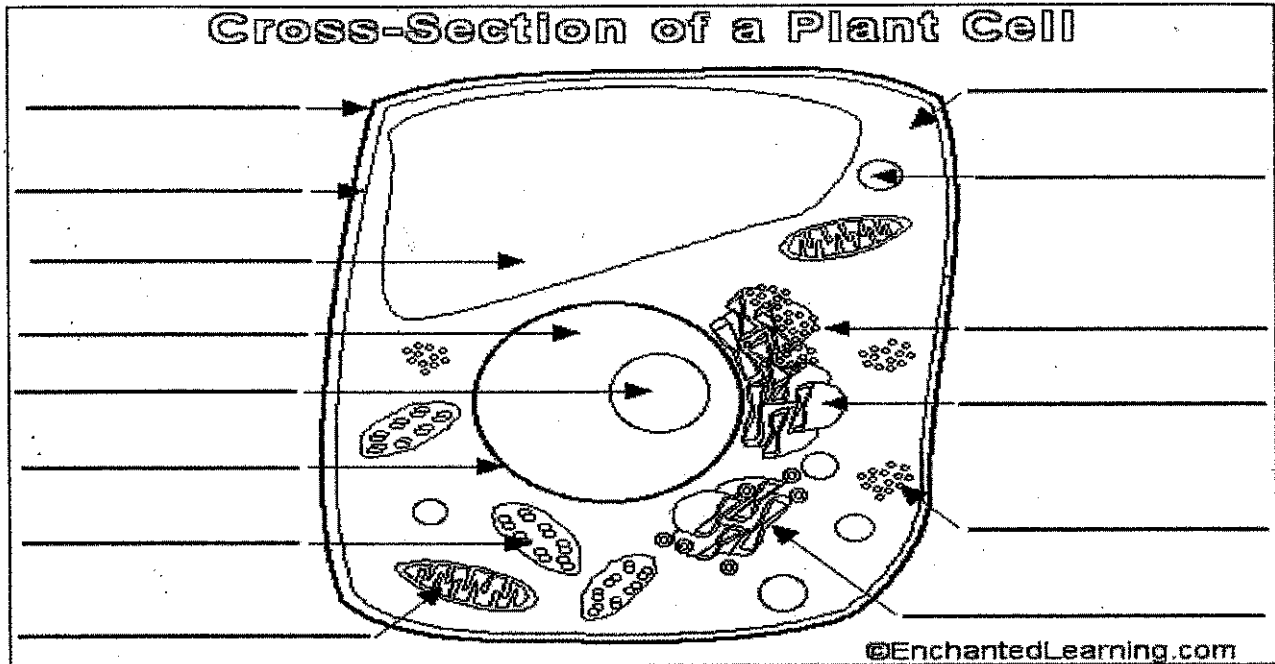
1. Go to <http://www.wisc-online.com/Objects/ViewObject.aspx?ID=AP11403> (or my web page)
2. Follow the directions and see how many organelles you can find.
3. Go to <http://www.funtrivia.com/playquiz/quiz14606510ba900.html> (or my web page)
4. Take the quiz and put your score here: \_\_\_\_\_ (each one is worth 10 points)

## ACTIVITY 6: PLANT AND ANIMAL CELL ORGANELLES QUIZ

My Partner(s): \_\_\_\_\_



1. Go to <http://www.lahc.cc.ca.us/biology/bio3/mchernoff/quiz.html> (or my web page)
2. Fill in your answers on the diagrams below and then compare them to the correct answer page.



Check the questions you got correct: ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 ☐11 ☐12

## ACTIVITY 7: THE MIXED UP CELLS

My Partner(s): \_\_\_\_\_



1. Go to <http://www.beaconlearningcenter.com/WebLessons/MixedUpCells/default.htm> (or my web page)
2. Follow the directions and record the data in the space below.



## ACTIVITY 8: CELL FOLDABLE

Product



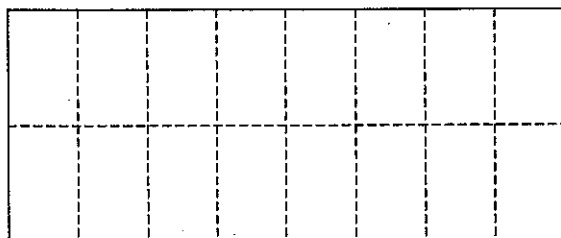
**Goal:** To create a pictorial representation of the parts of cells, with the name of the major organelles, and a description of their functions.

### Materials:

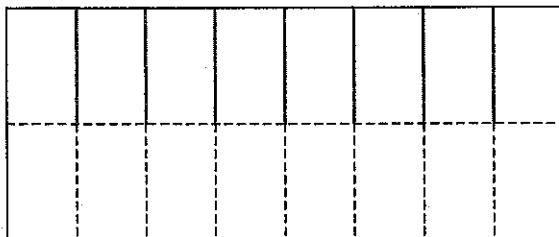
- 12 X 18 White "poster" paper
- Markers or colored pencils
- Scissors
- Textbook

### Procedures:

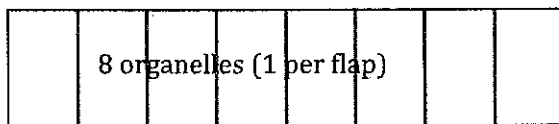
**STEP 1:** Fold poster paper in a way so that it is divided into 16 sections



**STEP 2:** Cut the folds on one side of the paper only



**STEP 3:** Draw each of the cell parts on the front of the flap as it is closed down.



**STEP 4:** On the back of the flap write the function of the organelle.

**Example: Nucleus** – This is the part of the cell that is the control center and directs all activity.

**STEP 5:** Put your name on the last flap on the front.

## ACTIVITY 9: THE CELL AS A SCHOOL



A cell is like our school. Each part of the cell (and school) has responsibilities that must be done and certain organelles (people or places) to do them. Identify the function of the following parts of the cell. Then, identify which person does the same job (or a place like it) in the school. The first one is done for you as an example to follow.

| Organelle                       | Function                                  | Part of our school that has a similar function |
|---------------------------------|---|--|
| Cell Membrane                   | Controls what goes in and out of the cell | Front Office                                   |
| Cytoplasm                       |   |  |
| Golgi Body                      |   |  |
| Lysosome                        |   |  |
| Mitochondria                    |   |  |
| Nucleus                         |   |  |
| Nucleolus                       |   |  |
| Ribosome                        |   |  |
| Rough ER                        |   |  |
| Smooth ER                       |   |  |
| Vacuole                         |   |  |
| Cell Wall<br>(Plant only)       |   |  |
| Chloroplast<br>(Plant only)     |   |  |
| Central Vacuole<br>(Plant only) |   |  |

## ACTIVITY 10: CELL INSPECTOR

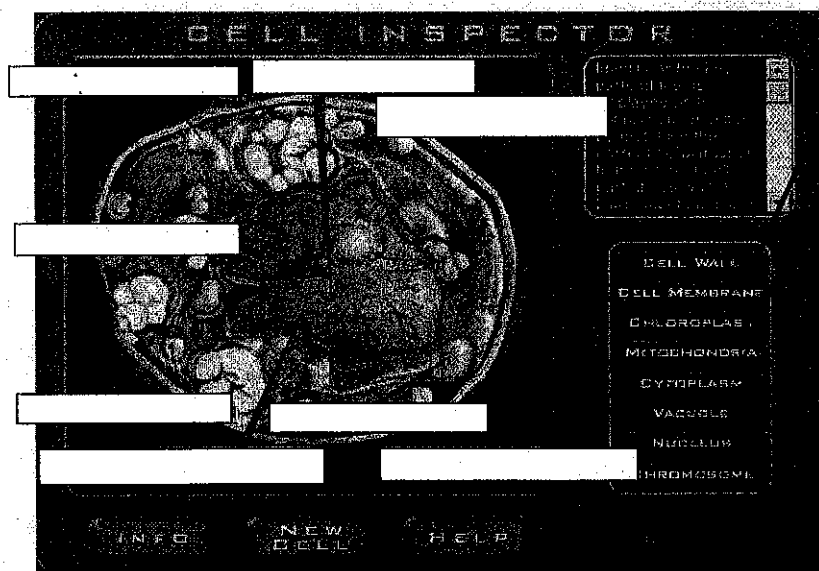
My Partner(s): \_\_\_\_\_



In this activity, you will identify cell parts and microscope. Follow the directions below to receive credit for this activity. Make sure you answer all of the questions and fill in all blanks to receive credit. Partial credit will not be given.

### Directions: Section 1

1. Go to the Cell Inspector website: <http://www.harcourtschool.com/activity/cell/cell.html> (or my web page).
2. Use the arrow keys provided to read the instructions in the box on the upper right. Click on the help key to get further instructions. Follow the instructions. Once you get 100 percent on all four cells, go on to step 3.
3. Record your correct answers for each cell in the space provided on this worksheet. (Make sure you have the right answers for the right cell. Be sure to answer the check questions. Now go on to Section 2.



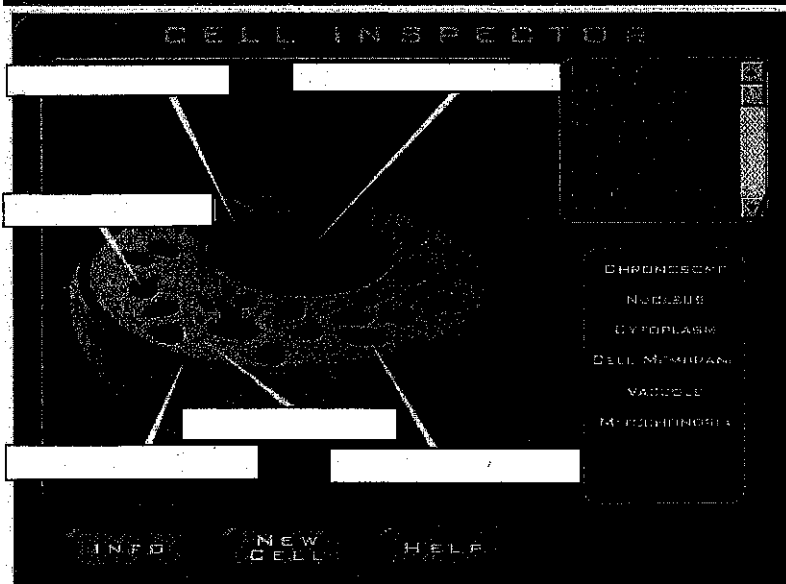
\_\_\_\_\_

\_\_\_\_\_

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Function: \_\_\_\_\_

\_\_\_\_\_

Function: \_\_\_\_\_

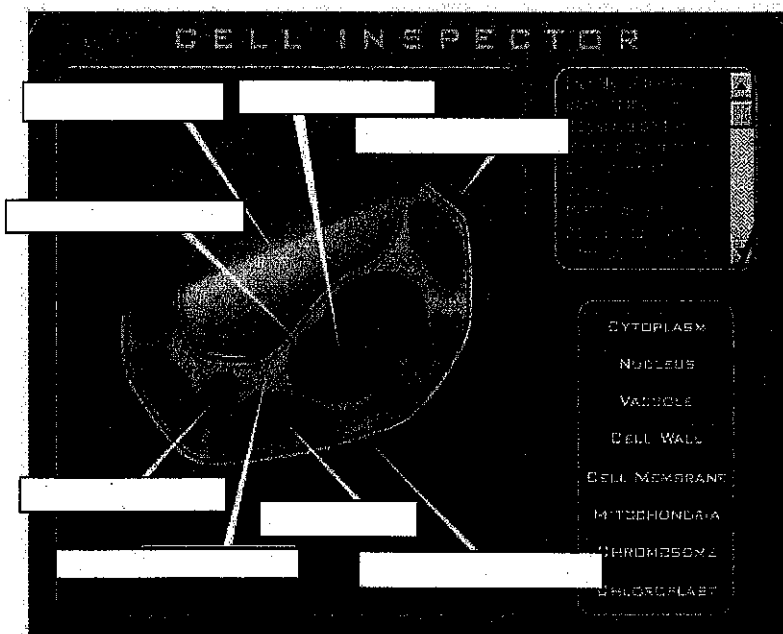
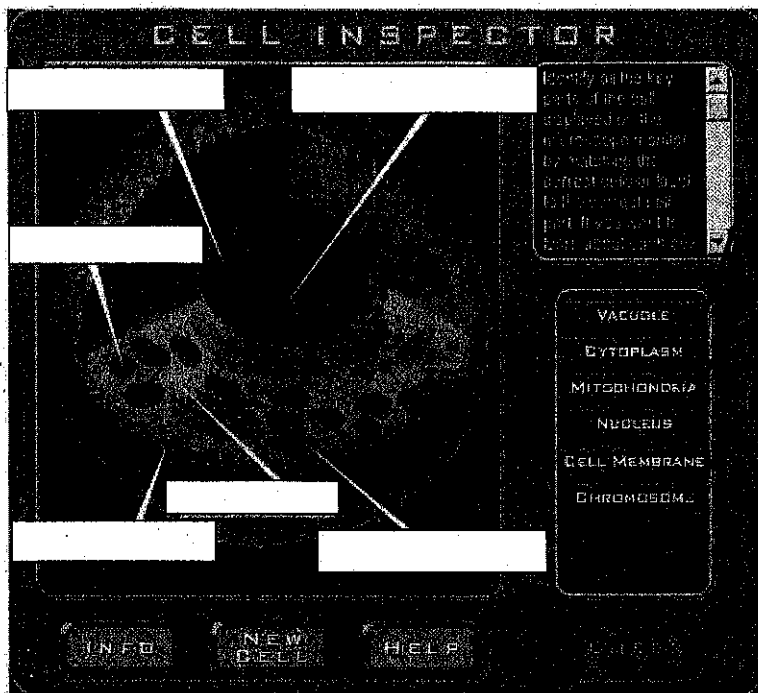
\_\_\_\_\_

Function: \_\_\_\_\_

\_\_\_\_\_

Is this a plant cell or animal cell?

**Check Question:** What is the name of the cell that appeared when you got all of the questions right?



## Section 2- How to Use a Microscope

Now that you are familiar with cell parts we are going to get you ready to look through a microscope. After you familiarize yourself with a microscope and how to use it, you will be looking at some practice views through a microscope to see if you can tell plant and animal cells apart. (Hint: Remember, plants have cell walls and animal cells do not.)

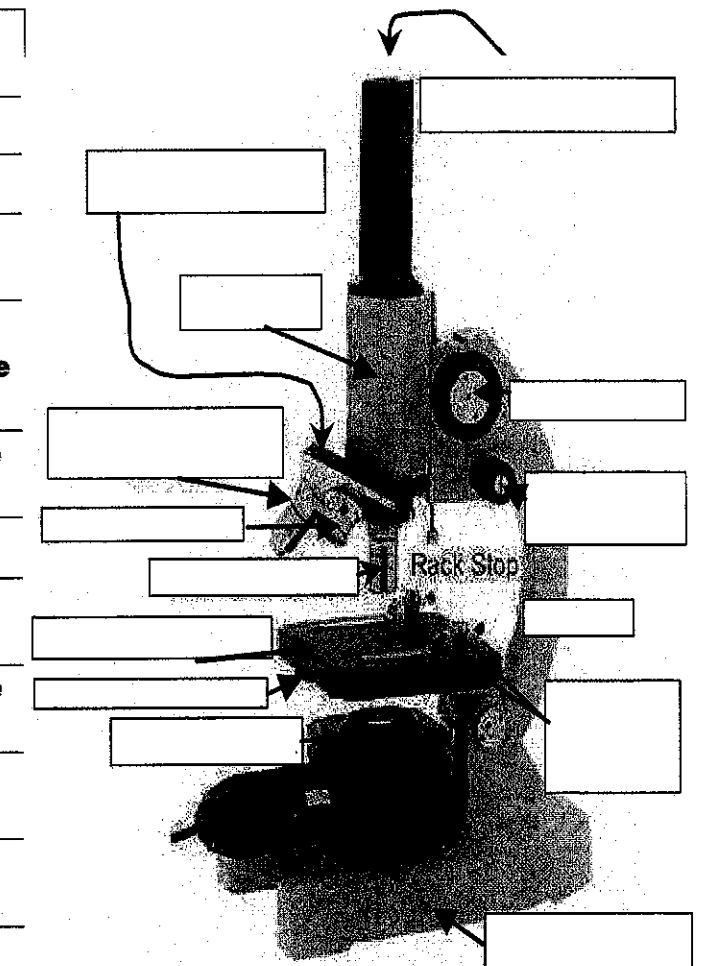
**Directions:**

1. Read through the following website to learn how to use a microscope: (on my web page)

[www.microscope-microscope.org/basics/microscope-parts.htm](http://www.microscope-microscope.org/basics/microscope-parts.htm)

2.- After you have read through all of the website, fill in the answers to the blanks below. If you need help, go to: [http://www.media.pearson.com.au/schools/cw/au\\_sch\\_phillips\\_sci2\\_1/dnd/4\\_1\\_2.html](http://www.media.pearson.com.au/schools/cw/au_sch_phillips_sci2_1/dnd/4_1_2.html)

|  |  |
|--|--|
|  | the lens you look through, magnifies the specimen                    |
|  | supports the microscope  |
|  | holds objective lenses   |
|  | the shortest lens, used with the coarse focus                        |
|  | supports upper parts of the microscope, used to carry the microscope |
|  | used to focus when using the high power objective                    |
|  | where the slide is placed  |
|  | regulates the amount of light reaching the objective lens            |
|  | used to focus when using the low power objective                     |
|  | the longest lens, used with the fine focus                           |
|  | hold slide in place on the stage                                     |
|  | provides light   |
|  | middle lens, has yellow stripe usually                               |



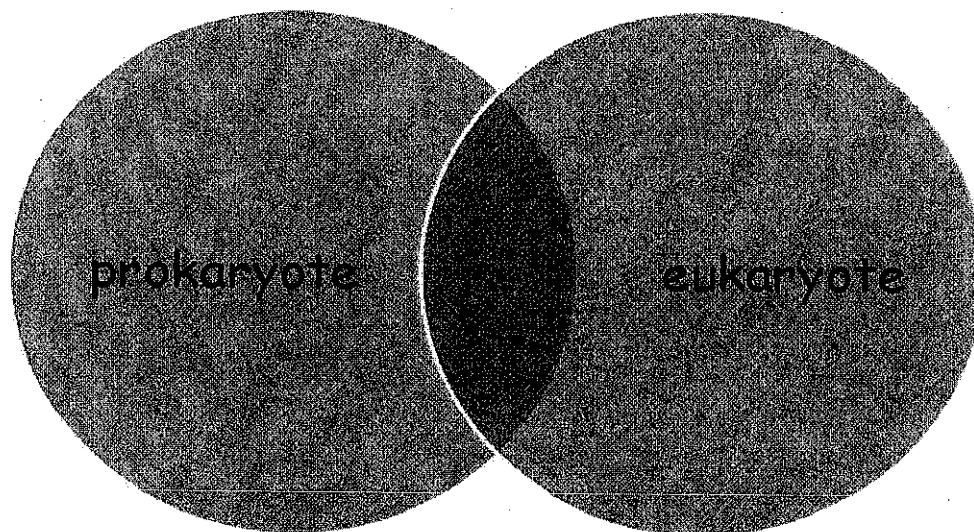
## ACTIVITY 11: CELL STRUCTURE



In this activity you will learn about the different types of cells and get to create your very own.

### Directions:

1. Go to [http://www.wiley.com/legacy/college/boyer/0470003790/animations/cell\\_structure/cell\\_structure.htm](http://www.wiley.com/legacy/college/boyer/0470003790/animations/cell_structure/cell_structure.htm) (or my web page).
2. Click on INTRO and then continue on by clicking the arrows.
3. Fill in the information in the organizer below.



2. In the following matrix, put a check in the box to show the organelle is present in prokaryotic or eukaryotic cells, or both, and state in 1 sentence what the function of the organelle is.

| Organelle                      | Prokaryote | Eukaryote | Function |
|--------------------------------|------------|-----------|----------|
| Cell membrane                  |            |           |          |
| Cell wall                      |            |           |          |
| Nucleus                        |            |           |          |
| Mitochondria                   |            |           |          |
| Chloroplast                    |            |           |          |
| Endoplasmic reticulum (smooth) |            |           |          |
| Golgi apparatus                |            |           |          |
| Lysosomes                      |            |           |          |
| Ribosomes                      |            |           |          |
| Endoplasmic reticulum (rough)  |            |           |          |
| Vacuole                        |            |           |          |

**ACTIVITY 12: WHAT I'VE LEARNED**

**(DO THIS LAST!)**



Directions: On the lines below, write about what you've learned by doing the activities in this packet. Be as specific as possible and use COMPLETE SENTENCES.

*Let me tell you about some of the important things I've learned about cells. First, I'll start with...*

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*Next, I'll tell you about...*

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*Something else I learned was...*

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*Lastly, I now really know about and understand...*

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